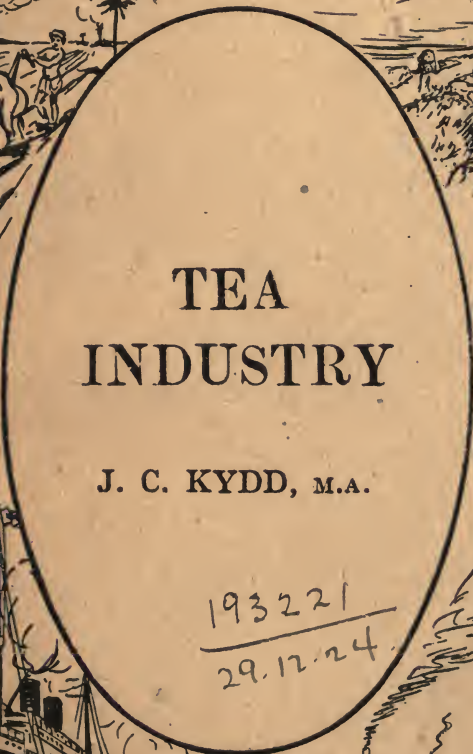


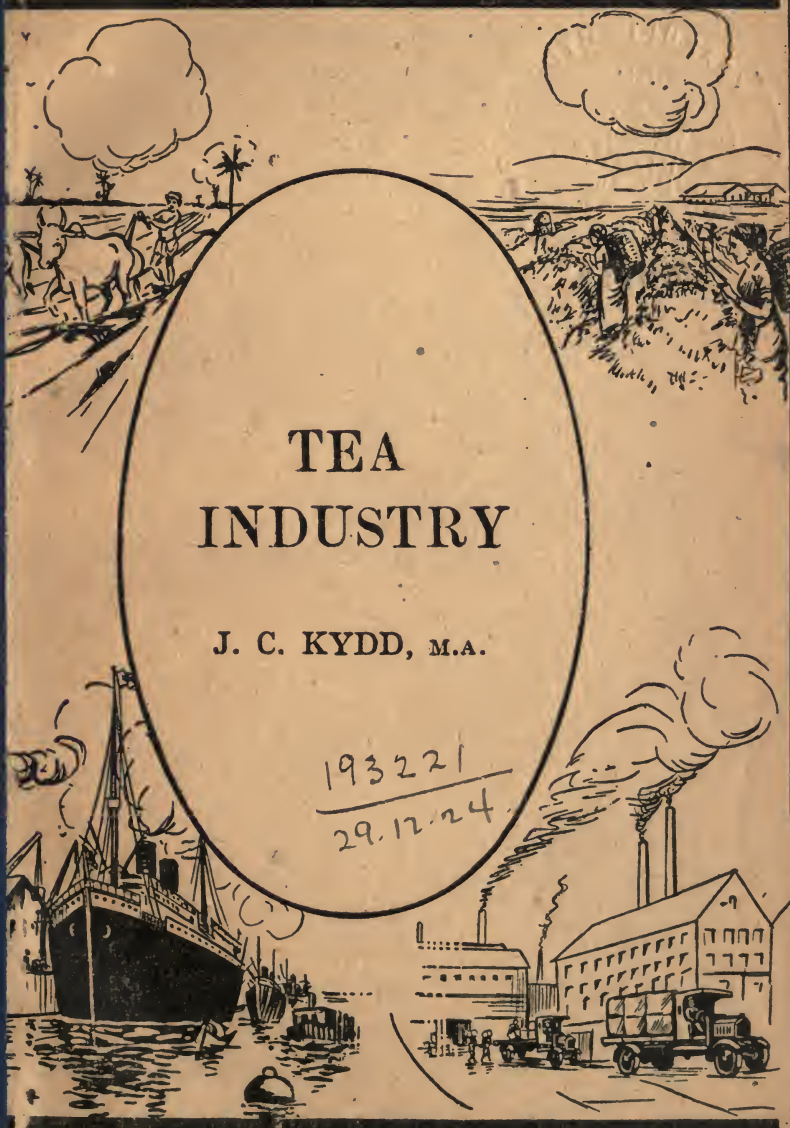
INDIA'S GREAT INDUSTRIES



TEA INDUSTRY

J. C. KYDD, M.A.

193221
29.12.24



H. K. MURRAY MILFORD. OXFORD UNIVERSITY PRESS



(FRONTISPIECE)



A Muster of Coolies at a Tea Factory.

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No. I

THE TEA INDUSTRY

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CONTENTS

	PAGE.
CHAPTER I. INTRODUCTION	7
CHAPTER II. ESTABLISHING AND MAINTAINING A TEA GARDEN	11
CHAPTER III. PLUCKING TEA	17
CHAPTER IV. WITHERING AND ROLLING	21
CHAPTER V. FERMENTATION AND DRYING	28
CHAPTER VI. SORTING, SIFTING AND PACKING	31
CHAPTER VII. THE SAMPLING OF TEA	36
CHAPTER VIII. THE TRANSPORT AND MARKETING OF TEA	40
CHAPTER IX. GREEN TEA AND BRICK TEA .. .	44
CHAPTER X. TEA DRINKING IN INDIA	48
APPENDIX. HOW TO PREPARE TEA	55

CHAPTER I

INTRODUCTION

Tea is so familiar a thing to us that we seldom stop to think of its origin unless we happen to be fortunate enough to visit Darjeeling, Assam, or some other district in India where it is grown and manufactured. We know that the brown liquid which we drink is made from small black leaves, but apart from that we are perhaps like the boy who, when asked where tea came from, replied, 'The shop.' But where does the shopman get his tea? To that question we shall get the answer as we read this book.

Like so many of the things which supply our daily needs, tea comes from a plant, and in answering our question we shall start with the plant rather than with the shopman. This means that we must go to a tea garden where the plant is grown and to a factory where the leaves of the plant are made into tea. Ordinarily we think of a garden as a small plot of land beside our house in which we grow flowers and fruit and vegetables. In China, which is looked upon as the original home of tea, the plant has for many many years been grown in gardens somewhat like those to which we are accustomed; and this may be the reason why the word is used for great tracts of land which seem to us to be very unlike gardens in the ordinary sense. For in India and in other countries where tea is now extensively grown the gardens are big

estates, generally of several hundreds of bighas in extent. They may stretch for miles along the plains, as in Assam, or may cover steep hillsides, as in the Darjeeling district.

One hundred years ago there were practically none of these gardens in India and such tea as was used came for the most part from China. (From China the manufactured tea found its way to the countries of the west where it was regarded as a great luxury, although the best use was not always made of it.) Sometimes, we are told, people in their ignorance spread the infused leaves on the bread they ate, throwing away what, ordinarily, we should drink. Sometimes, too, the tea was brewed in, more or less, the customary way, but in large quantities. It was then poured into a barrel from which it was drawn when wanted, and heated up before use.

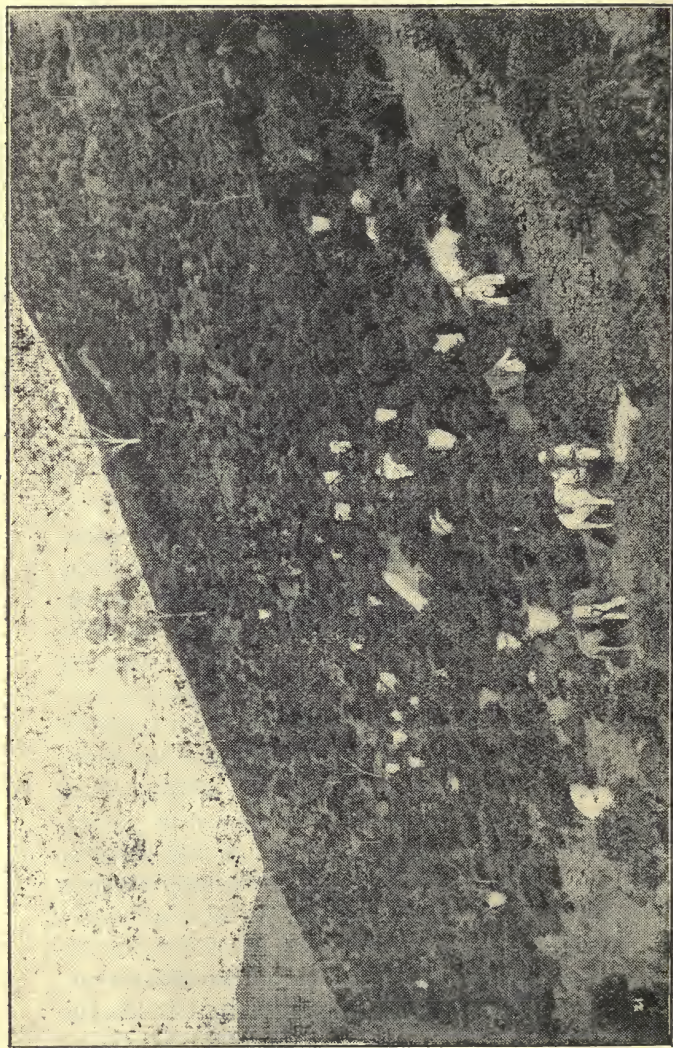
China has been referred to as the original source of tea and one token of our indebtedness to it for this great gift to man is to be found in the name we give to the plant and the beverage. (The Chinese name for tea is "Tcha" which is, of course, the origin of the word "cha" which is found, in some form or other, in most Indian vernaculars. A dialect form of the Chinese "tcha," which might be written as "tey" gives us the form which the word assumes in most western languages.)

In 1834, Lord William Bentinck, when Viceroy of India, with the desire of making India, and other parts of the Empire, independent of supplies from China, appointed a Committee to consider the question of bringing tea plants and seed from China and developing the cultivation of tea in India.) (After much money had been spent in expeditions to China, it was discovered that the tea plant was a native of the province of Assam in India itself, where, however, little profitable use had been made of it.) But now attention was seriously directed to the

growing of tea in India for sale in the open market in competition with China tea, and by 1836 the first consignment was sent to Calcutta. Lord Auckland, who was Viceroy at that time, was amongst the first to sample this consignment and he declared it excellent. By 1852 tea from India was competing successfully in London with China tea. After that date the expansion of the tea industry in India was very rapid, not only in Assam but in the Darjeeling district and in other parts. It is not known exactly how much tea is produced in China now-a-days, but it is reckoned that India is now the largest producer of tea in the world. It is certainly the most important supplier of tea to other parts of the world.

A knowledge of the countries in which tea is grown and manufactured would make us circle the globe. It is grown not only in India, Ceylon, and China, but in Java, in Japan, in Fiji, in certain other islands in the Pacific Ocean, in one part of the United States of America, on the shores of the Black Sea, and in Natal in South Africa. Take the map of the world and find all these places and you will realise how widespread is the tea industry.

In this chapter we have really gathered together reasons why we should know something about the cultivation of the tea plant and the manufacture of tea. That knowledge, as we have seen, can best be gained by paying a visit to a tea garden. Such a garden we might see in many parts of India; in various parts of Assam where it is so extensively grown; in South India in the Nilgiri Hills; in some parts of the United Provinces; or in the unhealthy Terai District, at the foot of the Himalayas. But we shall go rather to Darjeeling, a district which has become particularly associated with the name of tea, and which produces tea of very high quality.)



GENERAL VIEW OF A TEA GARDEN IN THE HILLS.

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CHAPTER II

ESTABLISHING AND MAINTAINING A TEA GARDEN

The journey to a tea estate is sometimes a difficult business for those who are unaccustomed to walking up and down steep hills and to riding. But on this occasion you will be spared the journey and taken at once amongst the regular rows of green bushes which cover the hillsides. (The tea plant is green and bushy and stands only a few feet high.) If we look under the leaves we find that the stem coming from the ground and some of the branches are very thick. This is because the bush has been regularly, and sometimes heavily, cut down or pruned in order to prevent its growth in height.) The plant is cultivated for its leaves and so the tea planter wants to guard against the growth of too much wood. (The work of pruning is mostly done during the cold season from November till March before the plant begins to send out its new shoots in the spring.) If a tea plant were never pruned it would grow like a tree and might attain to a height of from 15 to 30 feet. Pruning makes what would be a considerable tree into a low, leafy bush. Although pruning stunts the growth of the plant it does not make it less healthy. On the contrary, it is said to stimulate the growth both of branches and of roots.

There are a number of different varieties of the tea plant but the two main varieties are associated in name

with the countries of their origin—China and Assam. There are also mixtures of these two kinds. The China and Assam varieties are, of course, very similar in appearance, for many maintain that they came originally from the same plant, the differences resulting mainly from the environment in which they have grown for so long. But the differences are now well established and the Assam tea plant can generally be recognised easily, because it has a much larger leaf than the China plant. The general nature of leaves of the tea plant can be seen from the illustration. The flower of the tea plant is small, and white or rose coloured. It has five petals and is not unlike the familiar dogrose.

On the hillsides the plants are grown on rough terraces to give the roots a chance to strike down and to prevent the soil around them from being washed away by the rains. They are also grown sufficiently far apart to make it possible to pass through between them easily. If they are too close it becomes difficult to keep the ground between the bushes clear of weeds. The work of plucking the leaf is also hindered, particularly in wet weather or when the dew lies heavy on the plants, for naturally the pluckers do not relish getting wet.

The plants which we see all around us as we enter the tea garden were probably planted many years ago and in a well established garden we get little impression or idea of the work which must have been done when it was first laid out.

In all probability the hillsides were once covered with forest and thick jungle growth, inhabited by leopards, bears, wild pig, deer, and troops of monkeys. The trees and jungle had all to be cut down and burned and the land itself cleaned and dug, all the steep places likewise being terraced. But often a number of trees are left on

the hillsides or are specially planted. Planters maintain that some trees are very valuable in giving to the soil that which helps to stimulate the growth of the tea plant. Apart from this it is always a good thing to have some shade available for workers. Meantime plants ready to go into the land which has been prepared must have



TEA LEAVES, SHOWING FLOWERS AND SEEDS.

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been raised from seed. (The tea seed is not small, but normally about the size of a small marble. The seed is carefully sown and reared in special seed beds or nurseries.) When the plants have grown in the nurseries for several months they are transplanted, care being taken to carry with them big balls of earth around the roots. The transplanting is generally done in rainy weather so that the plants may have the best opportunity of taking root in their new environment.) Sometimes after a plant has been transplanted it sheds all its leaves, looking as it were dead. But this is not the case. The plant is merely making an effort to live after its change from the nursery. (The tea plant is an evergreen and does not ordinarily shed all its leaves as other trees do, but in the special circumstances of transplanting it needs all its strength to maintain its roots in the new soil and so its leaves are dropped.) This is a good illustration of how plants, as well as men, cling to life.

The new plants have now to be carefully tended and can not, of course, be expected to yield leaves for tea for some years. (On the tea gardens on the plains, where the climate is hotter and forces on the growth of new shoots, a certain amount can be plucked after three years ; and after six years the plants are regarded as fully grown and able to yield a full crop.) In the hills, and in such a garden as the one we have chosen to visit, growth is much slower, and it takes longer for a plant to come to maturity.) It may take even ten or twelve years before the plants can be regarded as full grown. But tea bushes live for a long time. At the end even of sixty or seventy they are often said to be healthy and vigorous. Some planters maintain that the tea plant can live and thrive for a hundred years when well cared for. Of course many die or become unprofitable for plucking long before they

attain this age. In such cases the plants are uprooted and their places filled with young bushes from the nursery.

In addition to all this preliminary work the tea planter has many other things to attend to ; of these the most important is the making of roads. In the hill districts this often entails considerable difficulties, and in any case means a lot of work ; for every part of the garden must be made accessible, and the roads must wind backwards and forwards, for they cannot go straight up a steep hill.

We may also regard the annual work of cultivation as preliminary, for we only see the results of it when we visit the garden. As a rule the soil in which the plants are grown is dug up deeply once a year after the end of the rainy season. The digging is done by means of a straight garden fork with a short handle and not with the *khodali* which is more familiar to us in India. With the former implement the soil is turned up and over, whereas it was found that with the latter it was pulled downhill with unfortunate results when heavy rain came and washed the soil away. In addition to the annual digging one or more light forkings may be given to the land, especially when the rains of the spring and early summer have caused the weeds to grow up again. In the rainy season no digging is done on a garden in the hills lest the loosening of the soil should lead to its being carried away by the floods of rain, but the weeds are cut by means of a sickle. The soil immediately round the stems, or as the planters call them the "collars" of the bushes, is likewise weeded by hand. It is now quite common for planters to sow a special crop amongst the bushes in order to get the benefit of it, when it has grown, for manuring the plants : for instance, before the spring rains a crop of *Kalai Dal* may be sown broadcast. After six weeks or

two months it has grown considerably and it will then either be dug into the soil or, if that would be dangerous in the event of heavy rain, be cut and allowed to rot on the ground. By many experiments this form of green manuring has been found to be very beneficial to the soil, and hence to the quality of the tea produced.

In this chapter some idea has been given of the work which has to be undertaken in establishing and maintaining a tea garden. The account is by no means complete, but of course, operations of this kind vary in different parts even of the same district and further details, which would perhaps be wearisome, are unnecessary.

CHAPTER III

PLUCKING TEA

But we do not see all that has been described in the previous chapter when we visit the garden. It is many years since the hillsides were cleared of forest and jungle, terraced, and planted with the tea bushes which are now full grown veterans. The narrow stony roads look as if they had always wound up and down the slopes. Every thing has a well established appearance.

The latter part of April is the time of our visit and the bushes are covered with a light fresh green, for they have all put out new shoots giving what the planter calls the 'first flush.' (The work of plucking begins when these new shoots have developed five leaves and a bud in addition to the small leaf at the foot of the shoot, known as the sheath leaf or the *jhannum*.) Leaves are of such importance to all plants that it would be foolish of the planter to strip the bushes of their greenery. It is through its leaves that a plant breathes and through them too, by the influence of the light, that it assimilates the food drawn in by the root underground. But the planter does not want to rob the plant of all its leaves, for the bigger and older leaves would make very coarse tea. What he wants are the tender leaves and the bud from the new shoots.

Like many of the other operations which we mention so simply, plucking is a skilled process and a planter can



FIRST AND SECOND FLUSH.

vary the quality and nature of his tea by the way in which he makes his coolies gather the leaves. Ordinarily, however, (what is plucked is the tender green bud, the leaf which grows beside it and the next leaf on the shoot, thus three fully developed leaves are left on the shoot, besides the small sheath leaf at the foot.) The bud and the two leaves taken are snipped off just below the larger leaf, as shown in the illustration. (As little coarse stalk as possible is wanted, for it does not make good tea and the pluckers soon have this impressed upon them by the sirdars who superintend their labours or by the watchful manager himself. As we can see if we visit a section of the garden in which plucking is in progress most of the work is done by women and young men and girls. On her back the coolie carries a basket supported by a strap round the forehead, and into this are thrown the shoots as they are plucked with both hands from the bushes.

When the sun is strong the leaves which have been plucked must be protected by a cloth or by a shield of wicker-work which can also serve on occasion as an umbrella.

The time of the first flush is a busy one on the tea garden, and all available hands are quickly put to this work. Young boys and girls do their bit and help to swell the family income, while on the plots nearer the



A GIRL PLUCKING TEA LEAVES, WITH A CHILD ASLEEP
ON HER BACK.

factory can be seen mothers, with babies lying in baskets slung on their backs, the baskets for the leaf being placed

conveniently amongst the bushes. The pluckers soon become very skilful at their work, and as payment is made by the weight of the leaf gathered they are often able to earn in a day twice the normal day's wage.

A week or two after the first flush has been plucked the second flush appears as shoots growing from the axils or nodes, as they are called, between the leaves left on the first shoot and the stem of the shoot. Ordinarily this second flush is taken when it is possible to let two leaves remain on the new shoot. After the bud and the two leaves of the second flush have been plucked the third flush comes away within a short time and so on. Altogether there may be as many as ten to fifteen flushes in the course of the plucking season but they cannot always be clearly distinguished, since some shoots come away more rapidly than others. On the stems of the third and subsequent flushes commonly only one leaf, other than the sheath or *jhannum* leaf is left. (Thus plucking goes on almost continuously from the time of the first flush in April or early May into the month of August or September.) During this time, too, the factory is kept busy manufacturing the leaf brought in.

(With regard to the plucking, it has been said that the tender bud and two leaves of the shoot are usually taken.) (We may say that roughly the finest tea, or Flowery Orange Pekoe, comes from the bud, the next best, or Orange Pekoe from the small leaf, Pekoe from the stem between the leaves, and Souchong from the second or large leaf. These are the four chief grades of tea manufactured on gardens in India.) These words Pekoe and Souchong, like the name tea itself, have been introduced directly from China. (It is worth noting that tea produced from the first flush is not regarded as of such good quality as that obtained from later flushes.)

CHAPTER IV

WITHERING AND ROLLING

In order to understand what happens to the leaves of the tea bush after they have been plucked we shall follow the coolies to the factory in the evening. They lead us to the weighing-in room where we find the manager of the garden superintending operations, for he has to see that care has been taken in plucking just the necessary leaves and stalk. The coolies in turn tilt up their baskets, emptying their contents into another basket which rests on the weighing machine. The weight of the leaf is then recorded against the plucker's name and number. The weighing basket is immediately emptied into another large basket which, when full, is weighed in another part of the room and then hoisted up into the withering loft. This system involves a double handling of the leaf, but if the coolie's basket is not emptied before the leaf is weighed unnecessary opportunity is given for swindling. Planters who have made use of the system of weighing basket and leaf together, in order to have only one handling, have discovered many devices for increasing the weight, common among them being the concealment of some extra weight in the basket. All the time the weighing is going on the manager and his head sirdars or other assistants are turning over the leaf to see that it is in good condition and that it has been carefully plucked. Occasionally a plucker will be stopped and given samples of his or



AT THE WEIGHING MACHINE.

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her bad work. In some such cases a stern warning is given in the colloquial Nepali the people speak; in others the clerk has to record a fine against the offenders. It is said that a few coarse leaves will spoil a whole basketful of tea, so careful examination must be made.

Reference has just been made to the withering lofts to which the green leaf is taken after being weighed. (The withering process is most important, for only when the leaf by this means has got rid of a great part of the water, which is to be found in each leaf, can it be successfully subjected to the later operations.) This withering process is similar to that of *Sakbhaja*, a favourite dish

for Indian boys, only the tea leaves do not receive heat direct from the furnace. (When the green leaf is hoisted into the lofts it is immediately spread on the tiers of trays with which the lofts are filled.) These trays are either made of wire mesh or are frames covered with a coarse and open jute cloth. The leaf is spread thinly upon these trays,—often by gangs of children under the careful supervision of an overseer whose business it is to see that there are no heaps or clumps of leaf, and that the leaf is being tenderly handled. (When the temperature is high, as in gardens on the plains, it is important to have cool houses in which to wither the leaf; but in the hill



A WITHERING LOFT.

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districts it becomes more necessary to provide some heat. This is why the withering rooms are so often lofts, or stories above the main factory, for they can then derive heat from the furnaces used in the factory below. Sometimes, and especially when there has been heavy rain the leaf has been brought in wet, a special amount of heat is required for the withering. In some withering houses, also, fans are used to keep the air moving.

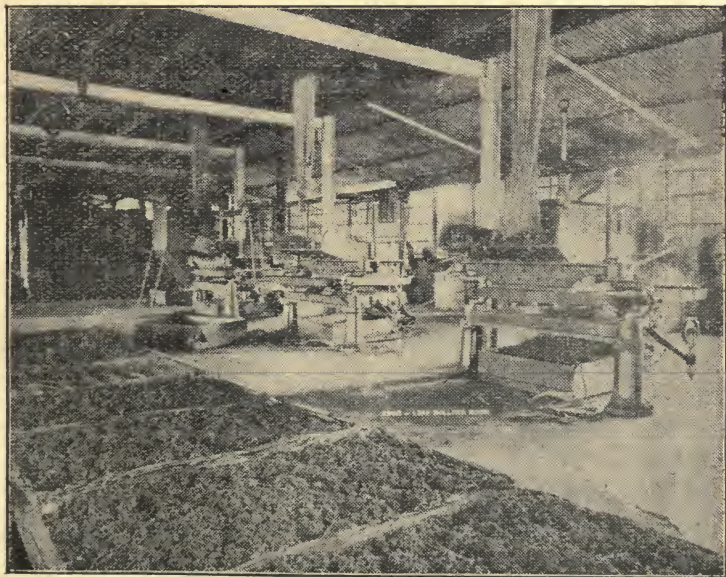
The length of the withering process naturally varies with the temperature and the state of the leaf. But in the hills it normally takes about eighteen hours for the leaf to wither completely; when fully withered the leaf is quite soft and "flaccid," as it is called, that is, the leaf and the stalk, which naturally takes longest to wither, can be doubled up or twisted without breaking. After withering the leaf still retains its green colour and planters say that it should smell like ripe apples. Just as some Indian boys like fully boiled rice when it is very soft, and others would take it at a stage short of fully boiled so sometimes tea leaves are purposely underwithered for it is then said to produce tea which gives a stronger infusion. But by the arresting of a chemical change which takes place during the withering the flavour of the tea suffers.

From the withering lofts the green tea is conveyed into the factory where it is fed into what is called the rolling machine which is driven by a belt from the engine. The engines used in the factories are, for the most part steam engines, but owing to the great difficulties of transport, coal for the furnace is both expensive and not always easy to procure. Accordingly in most factories in the hills wood is used as fuel. This means that wherever possible the planter lays out a good part of his garden in forest. It is said that for a garden which has one

thousand acres under tea as much as thirty thousand maunds of firewood will be required in the year, in addition to the wood needed for building and other purposes. For some factories in the hills power for the machinery is derived from water but the steam engine is by far the commonest source of power.

The top part of the rolling machine into which the leaf is fed rotates on a table of some hard material. To this table also a rotating motion can be given.

Pressure is brought to bear upon the tea by a pressure cap from above, and by lowering or raising this the tea can be hardly or lightly rolled as may be desired. Even when



THE LEAF ROLLING ROOM.

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the tea is being rolled hard pressure is reduced from time to time in order to prevent too much heating as that would injure the leaf.

(The object of the operation of rolling is to break up the cells of the leaf and so set free the juice or sap which is in the leaf. The rolling does this by bruising and twisting the leaf without actually breaking it into small pieces. Where tea is manufactured without the help of machinery, as still in many parts of China, this process is most carefully carried out, the leaf being worked by hand backwards and forwards on a table, just as the baker does when he works his dough. In the large tea factories of India the machine takes the place of the man but no less care is shown in the process. After the rolling the juice or sap remains on in amongst the leaves, and later when the leaf is dried only the water remaining in the leaf evaporates.) The juice, or essential oil, from the leaf is what gives flavour and strength to the tea when we pour boiling water upon it.)

The freeing of the juice prepares the tea for the next process of fermentation. (When the leaves come from the rolling machine they are wet with the juice and though they are still green they are darker than before the operation because the juice has become oxidised, as it is called, through coming into contact with the oxygen of the air. The smell of the tea from the roller is not yet characteristic of the prepared tea but is somewhat like that of green cabbages. It should be mentioned that an extra object of the rolling process is to give a twist or roll to the leaf which makes it look well when it is ready for sale.)

The length of the rolling process varies but may be said to last for from twenty to forty minutes. (When the leaf is taken out of the machine through a trap door on the table it is put on a sifter which consists of a long flat

sieve. This is forced rapidly backwards and forwards by power derived from the engine. The sieve slopes downward so that all the coarse leaf which cannot fall through it is carried down to the lower end where it falls into a box placed to receive it. This coarse leaf is put through the rolling machine once more, and for perhaps half an hour is subjected to considerable pressure and vigorous rolling.

CHAPTER V

FERMENTATION AND DRYING

After being sifted the fine leaf is immediately removed to the fermenting room where it is spread out to a depth of from one inch to four inches on a clean smooth surface which will absorb none of the juice from the leaf. Plate glass is a common surface for the fermenting trays but zinc, tiles, and white enamelled metal are also frequently used. In order to prevent the leaves which lie uppermost from becoming dry and black by the action of the air a wet cloth is spread on a wire frame over the fermenting leaves. The process of fermentation is a purely natural one whereby certain chemical changes take place in the leaf under such conditions as those which are arranged for in the fermenting room. This room is generally separated from the main factory, for it is important that its temperature should be kept low. It is said that for successful fermentation it should certainly never be allowed to rise above 80 degrees (Fahrenheit) which, however, the ordinary person would not regard as being cold. The process is not a long one. At the utmost not more than six hours will elapse between the time the leaf goes into the rolling machine and the time it is taken from the fermenting room. The period is naturally longest in the case of the coarse leaf which has been twice rolled.

During fermentation the colour of the leaf changes considerably and from being green becomes a yellowish

copper.) The colour is one indication of the time when the leaf may be taken off the trays, but the expert tea maker depends most upon the scent in determining when the leaf is sufficiently fermented. (When the process has advanced sufficiently the tea should have a pleasant fruity kind of smell more characteristic of its flavour as we ordinarily know it. The quality of the tea as finally produced, again depends considerably on the stage at which the tea maker removes his leaf from the fermenting room. (Tea which has been lightly fermented will give a thin liquid in the cup, but one which is pungent and full of flavours. Fully fermented tea, on the other hand, gives a much darker and heavier liquid, but with a much softer flavour.)

(From the fermenting room the tea is taken back to the factory to be dried. The purpose of the operation of drying is to stop the process of fermentation and to draw out all the moisture from the leaf without ridding it of its juice or the essential oils and other properties which give it its chief value.) There are many different kinds of drying machines which are mostly known by the names which their makers give them. In all cases the heat necessary for the drying is derived from a furnace beside or under the machine. Some of these machines are completely automatic, that is, the fermented tea which is fed in at one point is given out at another, dried to the extent to which the machine has been regulated. In others the tea is spread upon trays of fine wire mesh which are pushed by hand along metal grooves into the drying chamber. After a short time the trays are withdrawn and the tea is turned over before they are pushed back, for it is essential that all the tea be completely dried. In the newer types of machine the leaf is kept moving all the time inside the great oven.

Many tea makers put the tea through the drier only once but it is also common practice to do it twice, the first time at a temperature ranging from 230 to 260 degrees, the latter at a temperature of about 200 degrees. It is important that the temperature be kept as even as possible, and the stoking of the furnace which heats the drier, therefore, has to be skilfully done. When tea is dried it should be perfectly crisp and have the appearance and scent with which we are all familiar. That section of the factory in which the drying machines are situated is the pleasantest place of all in which to linger. The furnaces, which are being continually stoked with wood cut on the garden, make it delightfully warm—for you must remember we are up in the hills where it is often very cold—and nothing could be more enjoyable than the smell—or is aroma the correct word?—of the drying and dried tea.

CHAPTER VI

SORTING, SIFTING AND PACKING

(After being dried and weighed the tea is once more taken out of the main factory into the sifting and sorting room. This room is kept apart because during the processes of sorting and sifting dust and what is called "fluff" get separated from the tea, and for a time a great deal of this flies about in the air.) The "fluff" or "bloom," as it is also called sometimes, is a dark, orange coloured, woolly sort of down which is found on the bud and the underside of new and tender leaves. (It is the colour of the fluff which is said to give the name to the highest grade of tea, the orange or flowery orange pekoe.) It is most important in giving quality and flavour to tea, but a considerable amount of it becomes detached from the leaves during the friction of sifting and sorting. The fluff settles for the most part on the floor of the room from which it is carefully swept up and stored, for it has a commercial value. It is said that for every thousand maunds of tea manufactured there may be as much as twenty maunds of fluff gathered. This bye-product is sold to chemists who manufacture from it the important drug called 'caffeine.'

(When the tea comes into the sorting room it is first of all sorted by hand in order that all hard unsuitable leaf—red leaf it is called—long pieces of stalk, and things that aren't tea at all, like bits of bamboo etc., may be removed.) This work is light and is done by women, often those

unable for work outside the factory. It is commonly performed by throwing up several handfuls of tea on a



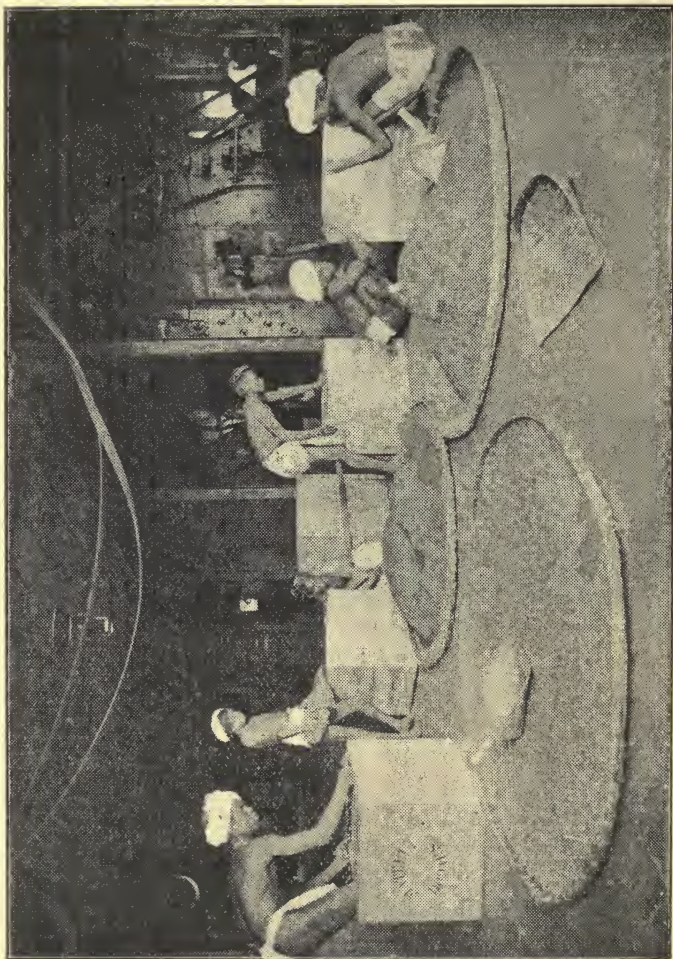
WOMEN REMOVING COARSE TEA BEFORE SORTING.

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round basket tray on which all that should not be there is easily seen. This process is called sorting but the word is hardly correctly used, for the actual sorting into grades is done by the sifting machines on which the tea is now placed. These sifters are similar to those used for sifting the green leaf taken from the rolling machine. There are, however, wire trays or sieves of different mesh which classify the tea according to its size. The first sieve is the finest and this separates the tea known as Flowery or Broken Orange Pekoe. What goes through the next

sieve is the Orange Pekoe. The third sieve separates the Pekoe grade of tea. The larger leafed tea which is left is known as the Pekoe Souchong or simply Souchong. This coarse tea is generally put through a breaker or cutting machine in order to make it more uniform in size. The dust and fannings have to be removed from all the grades of tea and this is done partly by an extra sifting to which each grade is subjected and partly by a final sorting by hand which winnows the flaky tea and dust. The women who do the sorting toss up the tea on their basket trays just as they do when they are winnowing grain. With this final sorting, which is sometimes also done by means of a winnowing machine the process of manufacture is completed.

(The tea has now to be securely packed, for it deteriorates in quality if left for long exposed to the moisture of the atmosphere. Before being put into boxes for despatch the tea is subjected to a final drying in order that all moisture still in the tea may be driven off.) The tea is taken from the drier so hot that one cannot hold it in one's hand and it is poured into the chests prepared for it while it is still warm. Where wood of a suitable kind is readily available the tea chests are manufactured on the tea estate and are made capable of taking amounts from ten to twenty pounds and upwards, the amount in pounds generally being in multiples of ten. The same size of chest will of course take a heavier weight of finer tea than it will of coarse tea. For example, one can get about twice as much tea dust into a box, reckoning by weight, as Pekoe Souchong. Inside the wooden chest is a lining of lead foil which can be soldered down on top when the box is full, thus making the whole air tight, and therefore capable of being preserved from the deteriorating influences of the atmosphere.



PACKING THE TEA.

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The packing is sometimes done by hand and in such cases care has to be taken that the tea is not injured by rough handling. But now it is more common, especially in the larger factories, to pack at least the finer teas by means of a machine. The chest is clamped on the machine which, when set a going, gives it a rapid vibratory motion while the tea is being poured into it. By this means the tea settles down compactly but without separating the finer from the coarser tea and without breaking up the leaf. This process is, of course, much quicker than the hand packing. When the required quantity has been packed into the chest the top of the lead lining is folded over and soldered down. The lid of the chest is then nailed on. Commonly too, an iron hooping is fixed around the chest to make it more secure. The chest is then marked prominently with the name or special mark of the garden producing it, the name of the grade of tea, and the factory number of the chest. It is then put aside, ready for despatch to the market.

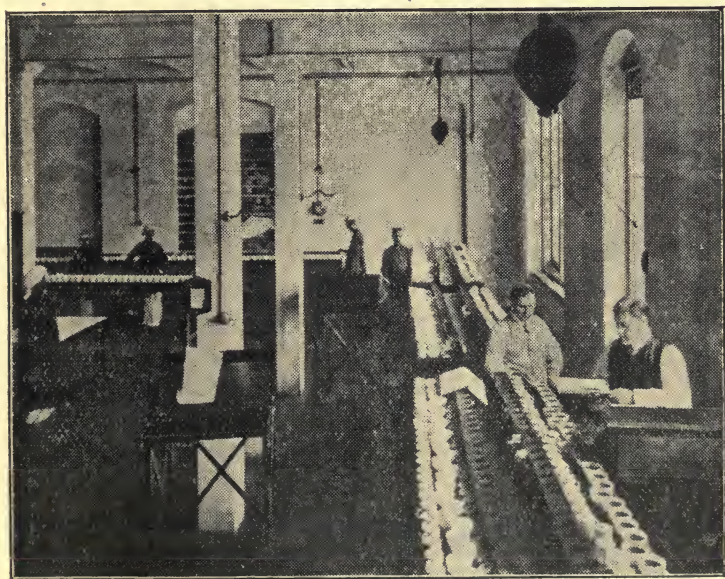
CHAPTER VII

THE SAMPLING OF TEA

When the tea has been packed in the factory a consignment is made up and sent by rail to Calcutta where it may be sold at the weekly sales or put on board ship for London which is the great tea market of the world. After it leaves the garden the tea has generally to pass through a number of hands before it reaches the grocer who retails it to us. During this process the tea is sampled by prospective buyers who wish to find out all they can about the quality of the tea and to ensure that the final purchase is equal to the sample given. The sampling of tea has become an expert business in consequence, and all buyers or dealers on a large scale have their special tea tasters and judges. But even on a tea garden one can find in the manager's office the equipment of the tea taster, for managers must test their own teas and naturally they like to compare them with samples of teas manufactured on other gardens.

A small quantity of the tea to be tasted is put into a small glazed earthenware pot without the familiar spout. The water used is taken just when it has reached the boiling point and water which has been boiled before is never used. The boiling water is then poured over the leaves and the tea is allowed to stand for five minutes, the time being calculated by a sand glass. When the five minutes have elapsed the tea is run from the pots into a white earthenware bowl. The leaf left in the pot, or the 'infusion' as it is sometimes called, is then put

into the inverted top of the pot which is laid beside the cup of tea. An expert taster will have a whole row of cups to sample at the same time. Of course he doesn't really drink the tea, that is, he doesn't swallow it. He just takes a mouthful, keeps it long enough to get the full flavour, and then spits it out. And of course he takes it without milk or sugar. The expert judges the quality of the tea by the taste for which he has many impressive phrases like 'malty liquor,' 'tippy tea' and so on ;



TASTING TEA.

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by the appearance and strength of the liquid in the cup ;
by the colour of the infused leaf which has been put in the
inverted top of the pot ; and by the amount of the liquid,

which this leaf retains. Many can judge the quality of the tea from the appearance of the dry leaf. But in such a case the commonest test is that "on the nose," as it is called. Different teas have quite distinct aromas which convey distinct impressions of quality and value to experts. If an ordinary person is given a sample of tea to smell he will almost certainly be told by the expert that he is not doing it correctly. To get the full aroma of the tea one must first breathe into the sample through the nose and then smell. Even such a simple thing as smelling apparently has its scientific side.

From the expert tea taster we may take a hint as to the proper way to prepare our morning and afternoon cups of tea. Cold water which has not previously been boiled should be used. When it has been brought to the boiling point it should immediately be poured on the leaves in the teapot, which should have been heated beforehand. The tea should then be allowed to infuse for some minutes—five minutes, as we have seen, is the period allowed by tea tasters—and then the liquid should be poured into another pot and from there into the cups, in which will have already been put such quantity of sugar and milk as we desire. In this way the flavour and best qualities of the tea can be obtained. But no doubt most of us would think this a somewhat extravagant way of preparing tea. Of course a great deal depends on the kind of the tea or rather the nature of the leaf. Small flaky tea, like fannings for instance, will give all their properties when the boiling water is poured on. But a well rolled leaf with some stalk will not yield up everything at the first brew and a second infusion might quite well be obtained from it, even with the approval of an expert. From one point of view such a tea would therefore be more economical. The grocer, or the dealer

from whom he buys, often studies this carefully and considering the nature, or perhaps one should say the tastes, of his customers may blend various grades or kinds of tea together so as to produce a mixture which will suit his buyers. Blending is another of the skilled processes connected with the sale of tea and as already suggested the object is to produce a mixture which when infused and in the cup will best suit particular buyers. For instance those for whom the practice of economy is essential will not want an open, flaky tea. They would rather sacrifice a lot in the way of flavour for a tea which can stand more than one infusion. So for such customers a blend of well rolled and twisted tea is wanted, and where a grocer supplies such customers from tea which he blends himself he will try to cater for their special needs.

But nowadays most of the tea we buy from the shops has the name of some large tea firm upon it. The blending, weighing, packing, and labelling is done by such firms on a large scale and modern machinery is therefore used for all the processes. These operations are done on such a large scale that the cost per pound packet is very small. It therefore becomes impossible for the small dealer to compete in the making up of tea in small quantities and his part in the tea trade has therefore been reduced to the retailing of packets prepared by big firms. The particular demands of customers may not be so carefully met through this development, but there is little doubt that the sale and use of tea have extended greatly. Within the last few years in India many of the small shops in the bazars of villages where tea drinking was previously unknown have been stocked with one pound and half pound packets of tea bearing names which may be said to have passed naturally into the vernaculars of the country.

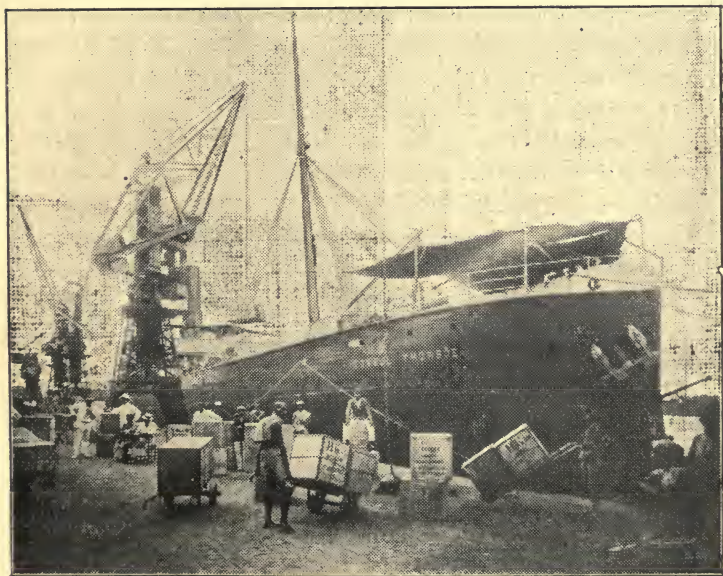
CHAPTER VIII

THE TRANSPORT AND MARKETING OF TEA

In the last chapter only brief reference was made to the manner in which tea is transported from the manufacturer to the consumer. When the tea leaves the garden in the Darjeeling district it has to be taken to the nearest railway station. This work is done by coolies who will carry one or two of the heavy chests on a wooden framework, somewhat like a chair, which is supported by a broad strap round the coolies' forehead. The chests are then packed in the trucks of the small hill railway train which winds slowly down the hillsides until it reaches the level of the plains at Siliguri, where the tea is transferred to a more ordinary kind of train. And so at last the chests reach Calcutta where they are transported to the tea godowns by means of bullock-carts, where these have not yet been supplanted by the more up-to-date motor lorry. We have said that tea, after arriving in Calcutta, is put on board ship for London, the great tea market of the world. In the days before the war the United Kingdom was the greatest consumer of India's tea, Russia being second and India itself third. The disturbances in Russia have led to a tremendous decline in Russia's trade in tea, so that now India stands as the second largest consumer of its own tea.

The tea which is shipped from Calcutta as soon as cargo space on a ship is available is that mainly

which belongs to tea companies with headquarters in London. Ordinarily it is not stored for long in Calcutta. But the produce of many gardens which are owned by companies with their headquarters in India or by private individuals is sold in India, and most likely in Calcutta which is the chief market in India. Chittagong is the only other port in India from which tea is shipped in large quantities. Calcutta exports about five times as much as Chittagong and together they are responsible for the export of 90 per cent of the tea sent from India to other countries. Normally, of course, the season for the shipping of tea corresponds more or less with the manufactur-



TEA BEING SHIPPED AT CALCUTTA.

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ing season. The exceptional difficulties which arose during the war and made necessary the storing of stocks of tea in Calcutta changed this somewhat. But such a change is only a temporary one.

As has been said much of the tea which makes its way to Calcutta from the gardens is sold by auction either to merchants who will ship it abroad or to dealers who will retail it in India. The agents of the tea-gardens do not conduct their own auction sales but employ tea-brokers, as they are called. These brokers draw up lists of the tea to be sold at the weekly sales held during the season. Such lists, with all necessary details, are printed and published for the benefit of likely buyers. Prospective buyers can obtain from the brokers samples of each consignment of tea of each grade from each garden. As a consignment from a garden is usually the result of several days' manufacture it is possible that there may be variations in quality as between chests of the same grade packed on different days. To avoid any such possible variation the tea is bulked. This is sometimes done in the factory, or before the tea is sold publicly in Calcutta or London. When tea is bulked the contents of chests of the same grade of tea in one consignment are emptied out, mixed together either by hand or machinery, and repacked in the chests.

When the brokers have sent out their lists before a sale buyers approach them for samples of the tea to be sold, and these samples are examined by the expert tea-tasters of whom we have spoken in a previous chapter. After tasting and examining each sample the tea-taster sets down a figure representing a price beyond which his firm should not go in purchasing the tea represented by the sample. Armed with a catalogue in which these top prices are marked the buyer goes to the weekly sale where

he endeavours to get the chests of tea he wishes at as low a price as possible. Naturally after the sale the buyer satisfies himself that he has obtained the same quality of tea as that already sampled. The agents who hold the tea then hand it over to the buyers who may represent firms in other countries or merchants desirous of disposing of the tea to consumers in India. Such merchants will probably blend the tea and make it up in the packets containing one pound or half a pound which have been referred to before. Most people prefer to buy their household stores in small quantities and this is why pound and half-pound packets are popular. And certainly since tea requires to be carefully stored it is better that the storing should be left to dealers who are able to do it satisfactorily, while purchases are made in small quantities.

CHAPTER IX

GREEN TEA AND BRICK TEA

The tea with which we are familiar and about which we have been reading is the black tea which is grown and manufactured in India. But green tea is another important product of the tea plant. It is so called from the colour of the tea when fully manufactured. The difference in colour is solely due to a difference in the process of manufacture and may be said briefly to be the result of omitting the fermentation stage.

When China had practically a monopoly of the trade in tea the Chinese Government were so very jealous of any attempts made by foreigners to discover the secrets of their tea industry that they put obstacles in the way of all visits of possible competitors to the great tea growing districts of the country. The result was that very little was known accurately about the cultivation and manufacture of tea and the difference between black tea and green tea was not rightly understood until about the middle of the last century. It was commonly thought that black tea was the product of one kind of bush and green tea of another. It was like a popular belief one sometimes hears expressed that Orange Pekoe, and Souchong come from different plants. But at last it was definitely established that the varieties of black and green tea came from the same bushes and that the difference

between them was merely the result of the different methods of manufacture.

In China tea, for the most part, is grown, not on large gardens but in small plots, of perhaps ten or fifteen bighas belonging to peasant farmers. Black tea is, of course, manufactured in China and frequently for this purpose the green leaf is sold to the agents of some merchant who undertakes its preparation for the market. But the Chinese also manufacture tea in their own houses where the equipment is of the simplest. When green tea is to be made manufacture commences almost immediately after the leaf is brought in from the field.

The first process is that of panning. Large open iron pans, not unlike what we call *dekchis* in India, are set on specially prepared fireplaces, and heated to a considerable extent. The leaf is then thrown into the pans. It is continually turned over and over by the men or women conducting the work. The heat makes the leaves crack and sets free the moisture in them. This moisture escapes as steam. Thus the leaf soon withers and in about five minutes is soft and pliable. It is then removed from the pan and put on a bamboo mat or table on which it is carefully rolled by hand. After some rolling the leaf may again be panned for a little before undergoing a second rolling. Sometimes after the rolling process the tea is exposed to the action of the atmosphere but if this is permitted to continue for long the leaf ferments and the final result will be something like a black tea. Ordinarily therefore the leaf is put in drying pans in which it is subjected to a slow heat until it is perfectly crisp. During this process the leaf is continually mixed and kept in motion so that the drying may be regular. One hour is generally a long enough period for this process. The manufactured tea, which is the result, is green in colour,

but the colour is not equal for the larger and coarser leaves become dark and almost like black tea. Accordingly we are told that the Chinese when preparing tea for export sometimes made use of colouring matter which gave to the whole an uniform bright green colour. Such colouring added nothing to the quality of the tea but it made it look better, and appearance is often an important item. This practice, however, is not so common nowadays. After the green tea has been dried it is sifted and sorted into different grades.

[In many parts of Asia, and in America, too, people distinctly prefer green tea; consequently in some districts of India, also, the manufacture of green tea has been undertaken. Where this is done to any extent modern machines and appliances like those used in the manufacture of black tea are employed rather than the simple Chinese equipment referred to above. Japan is a country which has specialised very considerably in the production of green tea. It now exports great quantities of it, its chief markets being the United States and Canada. China, strangely enough, is also an important buyer of Japan's tea. The Japanese believe that manufacture by means of machinery robs the tea of its full delicate aroma, and so in producing the highest grades of green tea methods of hand production like those described above are followed. But with the growth of its export trade machinery has come to take a bigger place. Often also a combination is made of hand labour and machinery. The Japanese ordinarily drink green tea themselves and without either milk or sugar. The result is that such black tea as is manufactured in Japan has practically no market within the country for it should be drunk with both milk and sugar.)

Still another kind of tea which is sold is what is called

Brick Tea. The trade in this kind of tea is chiefly in Thibet where it is made use of to a great extent. Hitherto most of the Brick tea has been manufactured in a district in western China from which it is exported to Thibet. In the case of this kind of tea little care is exercised in plucking from the bushes, for the coarse leaves and even the stems of the shoots are gathered as well as the tender leaves. The process of manufacture is similar to that followed in the case of green tea, except that the fermentation stage is not omitted. But with such coarse tea this process is somewhat different from that followed in the case of the ordinary black tea. After the leaf has been panned and rolled it is piled up in heaps, covered over, and left for several days during which time a mould grows amongst it. This mould is said to be largely responsible for the particular nature of brick tea. The tea is then dried in the sun or over a fire. It is sorted into grades, mixed with a thick paste prepared from rice which makes it stick together, and removed into moulds which produce bricks four feet long, nine inches wide and four inches deep. The tea is left in the moulds for three or four days by which time it has become quite hard. The bricks are then taken out, stamped in such way as the maker may desire and wrapped up in paper ready for transport. It is said that throughout Thibet, in addition to being used for the ordinary purposes of tea, these bricks form a sort of money and are exchanged freely in the bazars for products of all kinds. You and I may be glad, however, that we do not need this sort of money, but can use pieces of silver or paper. For it must be very uncomfortable to go shopping with bricks of tea in your pocket.

CHAPTER X

TEA DRINKING IN INDIA

As has been stated in a previous chapter (India is now the second largest consumer of the tea grown within its borders.) Wherever you go nowadays throughout the country you will see that (the drinking of tea has become very common amongst all classes of people. ^{in India}) In towns the Indian tea-shop is a well established institution and it has become a favourite rendezvous for friends.

(The encouraging of Indians in the drinking of tea has in large part been undertaken by the Indian Tea Cess Committee which is financed by a small cess or tax on tea exported from the country. ^{piece}) It is the business of this Committee to preach the value of tea-drinking and so seriously have they gone about this task that amongst the gramophone records which they have had made for their work there is one which gives a carefully prepared speech on the "Benefits of Drinking Tea." We are told that tea being a stimulant is a specially useful drink in a trying climate. Again, the Commissioner of the Tea Cess Committee has declared—"If all Indians habitually drank tea instead of water not only would internal illnesses and the death rate be very much reduced, but the general energy and initiative of the people would be much increased. Besides temperance workers advocate very strongly that the habit of tea drinking acts as a counter attraction to the habit of alcohol drinking." (One can



TEA SHOP AT A MILL.

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indeed be sure that when you boil water for tea you are killing all the germs in the water that might cause disease.)

But it is not enough to tell people what it is good for them to drink unless one puts that thing within their immediate reach. This has led to the establishment of tea-shops throughout all the large towns. In the first instance customers have been drawn to these shops by various means—cinema shows, Indian orchestras, singing, the provision of indoor games and gramophones, and attractive decoration. The Cess Committee report that they have over 700 gramophones and 8000 vernacular records, 200 harmoniums, and large quantities of table games in use throughout India helping to popularise tea rooms.

Amongst the workers in the large industries the drinking of tea may now be said to be quite a settled habit.) When visiting one of the large jute mills near Calcutta it is a most interesting experience to see the way in which the workers flock to the Hindu and Mahomedan tea-shops. It is said that on pay nights the shops sometimes remain open all night and do a great amount of business. A proprietor of such a tea shop in the mill district of Howrah earns about a thousand rupees per month. In all the large factories in India tea is available for those who wish to drink it. What is being done in the mills and factories is also being done in the mines and the Army. Facilities for drinking tea by passengers travelling on the railways are also widespread, and the cry of "Hot Tea" in one vernacular or another is one of the most familiar of cries which one hears at the railway stations throughout the country.

To show how in a city like Calcutta the number of tea-shops has grown the following figures are interesting.

In the end of 1915 there were 444 shops, in the end of 1916, 1124 shops, and in the end of 1917, 1420 shops.) The development has been maintained since then although exact figures are not available. It is the same in the case of other large towns in India. These shops are run by private enterprise but the Tea Cess Committee, so far as they are able, take an interest in their doings to see that proper methods of making tea are followed and that the customer is getting a good cup of tea.

(During the war, because of the shortage in the number of cargo carrying ships and for other reasons, it became difficult to ship from India all the tea which was available for export. It was then suggested that the surplus tea, or part of it, should be made up in small packets to be sold throughout India at the small price of one pice each.) At the time the idea was considered almost absurd. As we know tea must be carefully sealed from the air if it is to be kept in good condition. How could this be done if it were put up in small paper packets? Then what an army of people would be required to do the packing. And so the objections were piled one upon another as is frequently the case when new suggestions are put forward. But within a year the sale of pice packets of tea became common in many parts of India. The method in which all the difficulties were surmounted was as follows. The Tea Cess Committee prepared small envelopes capable of holding enough tea to make six cups. These envelopes they supplied in adequate quantities, along with a measure for the amount to be put in the envelope, to all shopkeepers, willing to take them, who sold a satisfactory kind of tea. When a demand is made upon him for a pice packet the shopkeeper fills the envelope from his large tin or box in which the tea is preserved in good condition, and hands it over to his customer in exchange for one pice. On the

envelope the following instructions are printed in four languages :

‘Empty the contents of this packet into an earthenware teapot and pour on enough well boiling water for six cups of tea. Add milk and sugar to taste.’

This popular system of selling dry tea was started in the beginning of 1918 and already the great advantages of it are very clear. In the eleven months preceding July, 1920, seven and a half thousand Pice Packets Shops were arranged for, and seven million Pice Packet envelopes supplied by the Tea Cess Committee. These figures give some little idea of how tea is rapidly becoming a popular article of consumption in India. Other evidence is open to all who take a walk down Cornwallis Street or Harrison Road in Calcutta or visit any large bazar in the Mofussil.

Nothing has been said in this little book about the chemistry of tea but brief reference must now be made to it because of the fact that some people cry down tea drinking as being harmful to the digestion. (In the tea leaf there are two constituents which are most important. One is an essential oil called tannin ; the other is ~~what~~ ^{theine} chemistry calls an alkaloid and it goes by the name of *theine*. (The tannin helps to give the tea its flavour ; the *theine* is the important property which makes a well prepared cup of tea so stimulating and refreshing. Now tannin, being what is known medically as an astringent, would interfere with good digestion if taken in any quantity. But in a cup of tea which has been well made there is little tannin, for it is not drawn out of the leaf so quickly as the more valuable *theine*. Ordinarily tea should not be allowed to infuse for more than five minutes. During this time the *theine* will have been extracted. After the first five minutes little theine will be drawn out of the

tea but more and more tannin. This is why tea which has been stewed, as it were, or infused for an undue length of time becomes bitter and unpleasant. But as we all know no drink is more pleasant and refreshing than a well made cup of tea. Over a thousand years ago a Chinese historian called Lo Yu realised this and wrote for tea the following testimonial.

“It tempers the spirits, harmonises the mind, dispels lassitude and relieves fatigue, awakens thought and prevents drowsiness, lightens or refreshes the body, and clears the perceptive faculties.”

The Chinese are a wise race and knew a great many things long before we did. Not the least of their discoveries was tea.

(India indeed can justly be proud of her great tea industry. It has brought infinite pleasure to an infinite number of people all over the world. In great countries like England, Russia, Canada or Australia it is the favourite drink of rich and poor alike. In England it has done more than anything else to introduce temperate habits amongst the people. Where men used to drink a glass of wine to refresh themselves, they now take a cup of tea. And the more the habit spreads in India the better will be the health of the people.

|| The English soldier loves his tea. A small packet is easy to carry and you can trust a soldier to make a little fire and boil some water wherever he is. In that respect he is like an Indian cook. Tea played a great part in the late war. The soldier liked to drink it a great deal stronger than would be good for you or me. He liked it almost black and with plenty of sugar to sweeten it. But then he was leading an open air and a hard life. There is nothing so invigorating at the end of a long day's march and nothing so comforting on a bitter cold day as a good ||

cup of tea. There is only one thing better than one cup of tea and that is two.

(It should also be remembered that it is by exporting such a large amount of tea that India helps to pay for all the things she needs to import from abroad, machinery and such things. India needs a great many things at present manufactured abroad if she is to develop into a great and powerful country, and to pay for them she must give her own products in return. Since the War, for one reason or another, the world has not been demanding so much of India's tea or other products. This is bad for India and we have to pay heavily for the things we wish to buy elsewhere. Let us hope that with the restoration of peace things will soon improve, and that this great industry of India will flourish once again as it so fully deserves to do.

APPENDIX

HOW TO PREPARE TEA

Use good Tea. The lowest priced Tea is not economical as much larger quantities must be used to give equal strength.

1. Use an earthenware teapot
2. First warm the pot by filling with hot water and emptying again



3. Put in one teaspoonful of tea for each person and one extra
4. See that the kettle boils fiercely



5. Then fill the pot with boiling water and put on the lid



6. Allow to stand for 5 minutes, then stir with a spoon



7. And pour out the first brew



8. Add a few drops of milk and also a little sugar if liked



9. Refill the pot with boiled water and allow to stand for another five minutes



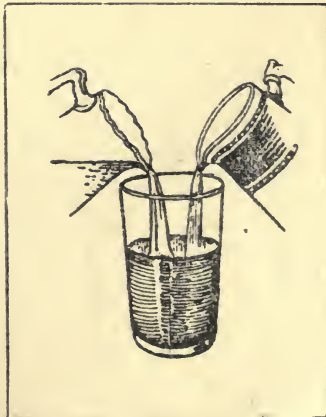
10. When the second brew will be ready and should be poured out



11. Pour off any surplus liquor into a jug at once



12. As this may be drunk cold after diluting with an equal quantity of cold boiled water and adding a slice of Lemon and a lump of Ice.



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